

AMENDMENTS TO THE CLAIMS

1-33 (Canceled)

34 (Currently Amended) A substrate processing apparatus for cleaning a substrate, comprising:

a substrate holder for holding a substrate having a copper film thereon;

a processing head having anodes and cathodes, arranged alternately along at least one direction, so as to face the substrate when held by said substrate holder, said anodes and cathodes being away from the substrate when held by said substrate holder;

a processing liquid supply section for supplying a processing liquid containing an electrolyte between the substrate, when held by said substrate holder, and said anodes and cathodes, said processing liquid supply section comprising supply ports and suction ports, with each of said supply ports being in a corresponding one of said cathodes, and with each of said suction ports being in a corresponding one of said anodes;

a power source for applying a pulse voltage, the pulse voltage being between said anodes and cathodes, so as to generate microbubbles~~micro-bubbles~~ in the processing liquid when between the substrate and said anodes and cathodes; and

an ultrasonic transducer for emitting ultrasonic waves to the processing liquid, when the processing liquid is between the substrate and said anodes and cathodes, so as to collapse the microbubbles~~micro-bubbles~~ and so as to not produce bubbles, said ultrasonic transducer being on said processing head so as to face the substrate when held by said substrate holder, and said ultrasonic transducer and said anodes~~anode~~ and cathodes being arranged next to each other.

35-37 (Canceled)

38 (Currently Amended) The substrate processing apparatus according to claim 34, further comprising:

another ultrasonic transducer for emitting ultrasonic waves to the processing liquid, when between the substrate and said anodes and cathodes, so as to collapse the microbubbles~~micro-bubbles~~, said another ultrasonic transducer being on said processing head so as to face the substrate when held by said substrate holder, and said ultrasonic transducer and said another

ultrasonic transducer being generally triangular in shape and arranged symmetrically about a center of said processing head.

39 (Canceled)

40 (Previously Presented) The substrate processing apparatus according to claim 34, wherein a distance between the substrate, when held by said substrate holder, and said anodes differs from a distance between the substrate, when held by said substrate holder, and said cathodes.

41 (Currently Amended) The substrate processing apparatus according to claim ~~34~~³⁵, wherein at least one of said substrate holder and said processing head is operable to provide relative movement between the substrate, when held by said substrate holder, and said processing head during application of the pulse voltage between said anodes and cathodes.

42-53 (Canceled)

54 (New) The substrate processing apparatus according to claim 34, wherein said anodes are made of conductive diamond.

55 (New) The substrate processing apparatus according to claim 34, further comprising a surface on said processing head,

wherein said anodes and cathodes are arranged in a plurality of rows across said surface on said processing head, said rows being arranged in a parallel manner such that said anodes and cathodes are arranged in a symmetrical pattern and spaced evenly across said surface.

56 (New) The substrate processing apparatus according to claim 55, wherein each of said rows contains either all anodes or all cathodes.